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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/347,637	07/06/1999	LOREN SHIH	SNS-006CP1-(7268/10)	4126

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TESTA, HURWITZ & THIBEAULT, LLP
HIGH STREET TOWER
125 HIGH STREET
BOSTON, MA 02110

EXAMINER

SANTIAGO, ENRIQUE L

ART UNIT PAPER NUMBER

2671

DATE MAILED: 06/04/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/347,637

Applicant(s)

SHIH ET AL.

Examiner

Enrique L. Santiago

Art Unit

2671

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 March 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1-36 are rejected under 35 U.S.C. 102(e) as being anticipated by Tarr US patent no. 6,191,796.

-Regarding claims 1, 10, 19 and 27, Tarr teaches a method for modifying a virtual object in a haptic virtual environment, comprising: determining a virtual tool comprising a plurality of discrete points for use by the user in the haptic virtual environment (see fig. 1D, column 5, lines 36-46, column 42, lines 30-31); selecting a modification mode for the virtual tool (see figs. 3A and 4, column 2, lines 64-67, column 3, lines 5-7, column 7, lines 38-42, column 8, lines 10-21); sensing a location of a user in real space (see fig. 1A, the abstract, column 2, lines 2-24, column 4, lines 45-47, column 6, lines 14-16, column 36, line 25); determining locations of the plurality of discrete points of the virtual tool relative to a location of the virtual object (see the abstract,

Art Unit: 2671

column 15, lines 32-64, column 5, lines 36-46, column 15, lines 20-27); calculating an interaction force between the virtual tool and the virtual object based on the locations of the plurality of discrete points of the virtual tool and the location of the virtual object (see the abstract, column 2, lines 2-24, column 4, line 11-column 5, line 9, column 30, line 62-column 31, line 11); producing a modified virtual object by modifying the virtual object based on the modification mode, the locations of the plurality of discrete points of the virtual tool, and the location of the virtual object; and outputting the modified virtual object (see figs. 1B, 1C, 3-8, the abstract, column 7, lines 20-43, column 9, line 56-column 10, line 44, column 36, lines 19-54).

Regarding claims 2 and 11, Tarr further teaches determining a virtual surface for the virtual object (see the abstract, column 2, lines 51-53, column 3, lines 8-10); and determining a position and an orientation of the virtual tool by determining the locations of the plurality of discrete points relative to the virtual surface of the virtual object (see column 5, lines 35-46, see column 8, lines 51-66, column 9, lines 5-25, 41-45).

-Regarding claims 3 and 12, Tarr further teaches determining a virtual isosurface for the virtual object (see the abstract, column 2, lines 51-53, column 3, lines 8-10, column 32, lines 54-67, column 33, lines 45-51).

-Regarding claims 4 and 13, Tarr further teaches a virtual object that is a volumetric representation (see column 16, lines 51-65).

-Regarding claims 5 and 14, Tarr further teaches a volumetric representation comprising voxels including density values (see column 16, lines 51-65, column 22, lines 36-43, column 36, lines 59-63).

Art Unit: 2671

-Regarding claims 6 and 15, Tarr further teaches selecting a modification mode for the virtual tool (see column 8, lines 10-21) comprising selecting one of a material removal (see column 8, lines 10-21, column 19, lines 43-45, column 22, line 57-column 23, line 6), a material addition (see column 8, lines 10-21, column 22, line 36-46), and a material modification mode (see column 8, lines 10-38).

-Regarding claims 7, 16, 25 and 33, Tarr teaches determining at least one virtual constraint for the movement of the virtual tool (see column 7, lines 35-43, column 8, lines 39-43, column 17, line 56-column 18, line 5).

-Regarding claims 8, 17, 20 and 28, Tarr further teaches determining at least one virtual constraint for the movement of the virtual tool, determining at least one of a point, curve and surface constraint for the movement of the virtual tool (see fig. 7, 8 and 10, column 17, line 56-column 18, line 5).

-Regarding claims 9 and 18, Tarr teaches exporting the modified virtual object (see figs. 1A, 1C, 3C, 18B, column 4, lines 11-33, column 6, lines 46-60, column 8, lines 51-58, column 9, lines 53-57).

-Regarding claims 21 and 29, Tarr further teaches moving the position of the virtual tool to coincide with the haptic interface location (see fig. 7, 8 and 10, column 17, line 56-column 18, line 17).

-Regarding claims 22 and 30, Tarr further teaches modifying the virtual object based on the position of the virtual tool (see the abstract, column 2, lines 3-34, column 8, lines 51-66, column 10, lines 15-43, column 12, lines 3-16).

Art Unit: 2671

-Regarding claims 23 and 31, Tarr further teaches calculating an interaction force among the constraint geometry, the virtual object, and the virtual tool in response to the step of determining the position of the virtual tool (see column 10, lines 15-43, column 12, lines 3-16).

-Regarding claims 24 and 32, Tarr further teaches selecting a modification mode for the virtual tool (see figs. 3A and 4, column 2, lines 64-67, column 3, lines 5-7, column 7, lines 38-42, column 8, lines 10-21), and modifying the virtual object in response to the modification mode and the position of the virtual tool (see the abstract, column 2, lines 3-34, column 8, lines 51-66, column 10, lines 15-43, column 12, lines 3-16).

-Regarding claims 26 and 34, Tarr further teaches constraining the rotation of the virtual tool (see column 7, lines 35-43, column 8, lines 39-43, column 17, line 56-column 18, line 5).

-Regarding claims 35 and 36, Tarr further teaches a method wherein the virtual object comprises a voxel-based virtual object (see the abstract, column 16, lines 51-65).

Response to Arguments

Applicant's arguments have been fully considered but they are not persuasive.

Regarding the applicants arguments that Tarr does not disclose a virtual object other than as a surface, the Examiner disagrees (see column 1, lines 16-27, column 16, lines 51-65). The user is interacting in a virtual reality with three-dimensional objects. As an example the applicants own argument that Tarr uses the term "voxel" with regard to the three-dimensional nature of a virtual tool having a volume (column 14, lines 4-32, column 16, line 30-column 17, line 8, column 19, lines 17-53), shows that Tarr discloses a three-dimensional virtual object.

Art Unit: 2671

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Enrique L. Santiago whose telephone number is (703) 306-5908. The examiner can normally be reached on Monday to Friday from 7:00 A.M. to 3:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Zimmerman, can be reached at (703) 305-9798.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

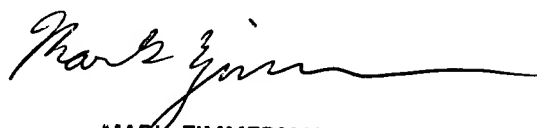
Art Unit: 2671

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,
Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or
proceeding should be directed to the Technology Center 2600 Customer Service Office whose
telephone number is (703) 306-0377.

Enrique L. Santiago

June 3, 2002


MARK ZIMMERMAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600